



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/696,392	10/25/2000	Jerry Moro	17900-32	4119

7590 12/02/2003

SQUIRE SANDERS & DEMPSELY L.L.P.
801 SO. FIGUEROA ST 14 th FL
Los Angeles, CA 90017-5554

EXAMINER

JONES, JUDSON

ART UNIT PAPER NUMBER

2834

DATE MAILED: 12/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/696,392	MORO ET AL.	
	Examiner	Art Unit	
	Judson H Jones	2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26,30-61,63-83 and 85-88 is/are pending in the application.
- 4a) Of the above claim(s) 31-43 and 63-76 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 44-48 and 82 is/are allowed.
- 6) ☒ Claim(s) 1,3,19-21,23-30,49-55,58,59,77-80,82,83 and 85-88 is/are rejected.
- 7) ☒ Claim(s) 2,4-18,22,56,57,60,61 and 81 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Applicant's arguments with respect to claims 1-20 and 78-83 have been considered but are moot in view of the new ground(s) of rejection. Because the scope of the independent claims in this case apply to "an electromagnetic drive motor" and thus are not limited to any specific type of motor and because the structural elements recited in the claims can apply to a broad range of motors, it is very difficult to do an exhaustive search on these claims. While Applicant has added limitations to the independent claims which define over the prior art of record, the MPEP states in section 904.01(a), "Substantially, every claim includes within its breadth or scope one or more variant embodiments that are not disclosed in the application, but which would anticipate the claimed invention if found in a reference. The claim must be so analyzed and any such variant encountered during the search should be recognized." The MPEP further states, "Not only must the art be searched within which the invention claimed is classifiable, but also all analogous arts regardless of where classified."

Claim in the Case

In the copy of the claims received from applicant 10/14/2003, claims 31-43 and 63-76 are described as having been cancelled. No record of such a cancellation has been found. Applicant elected without traverse to prosecute claims 1-30 and 44-62, which meant that claims 31-43 and 63-76 were withdrawn from consideration.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 21, 77 and 78 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are: a coil for the motor. Without a coil connected in some manner to the upper and lower pole pieces and/or the upper and lower plates, the motor will not operate. Also, since applicant claims top and bottom magnetic gaps in claims 1, 21, 77 and 78, the claims appear to need dual coils.

Claims 1, 21, 49, 58, 77 and 78 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. According to the specification, applicant is disclosing a dual coil, dual gap voice coil motor where the coil moves in a linear or linearly reciprocating fashion with respect to the magnet. However, the claims are drawn to an “electromagnetic drive motor.” Electromagnetic drive motor is a lot broader in scope than dual coil, dual gap voice coil motor because that term also includes rotary motors. Since no rotary motor embodiments are disclosed, Applicant does not deserve protection for anything more than a linear motor and, in particular, a dual coil, dual gap linear voice coil motor. See *In re Brower and Fuzek*, 167 USPQ 684 (CCPA 1970) which states, “... it is now clear that those claims, if too broad, were so only in the sense that they encompassed more that appellant’s manifestly regarded as their invention.”

Claim Objections

Claim 20 appears to have an antecedent basis problem. 20. The claim reads “wherein the upper pole piece has an increased saturation area where the cross-sectional area is smaller than

the rest of the top plate ...” “The rest of the top plate” makes no sense because no alterations have been made to the top plate in claim 20. The upper pole piece has been modified. Support for claim 20 appears in the specification on page 12 and in figure 2B where the pole piece 12” is shown with 2 tapered ends.

Claim 85 is dependent on cancelled claim 84.

Claim Terminology

“A flux stabilization ring” is viewed as being any circular element that affects the motor flux in a positive manner. According to the abstract of Japanese reference JP404335799A, “A voice coil 2 coupling with a diaphragm 1 is fitted to an air gap 8 of the magnetic circuit 11 so as to short-circuit a magnetic flux generated by a voice current flowing to the voice coil 2 thereby stabilizing the main magnetic flux generated by magnet 5 and reducing harmonic distortion.” In other words, a shorted turns coil is a flux stabilization ring. See also Kordik 4,584,495 A column 7 lines 35-38, which also states that conductive ring and shorted turn elements are different phrases used to describe the same elements. See also Denne 5,440,183 A column 11 lines 28-31 which states that a steel piston cylinder can act as shorted turn. As can be seen in figure 23, the cylinder described by Denne is also the motor housing.

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 3 are rejected under 35 U.S.C. 102(b) as being anticipated by Roters, deceased et al. 3,891,874 A. Roters et al. discloses in figure 1 an electromagnetic drive motor comprising a flux return assembly having an upper pole piece 18, a lower pole piece 16 and a flux stabilization ring 12, which is the magnetic housing as described in column 3, lines 21-24.

The housing serves to hold the upper and lower pole pieces together. These features are shown in figure 1. In figure 3, Roters et al. discloses a top plate 146, a bottom plate 144, a magnet 160 between the top and bottom plates, along with a top magnetic air gap and a bottom magnetic air gap. In figure 3, the upper and lower pole pieces are shown as being combined into one piece. However, since Roters et al. shows the pole pieces as being in two parts in figure 1 and since making the poles pieces the same for the two embodiments would reduce manufacturing costs, it would have been obvious at the time the invention was made for one of ordinary skill in the art to have utilized two piece pole elements in the device of Roters et al. figure 3.

Claims 1 and 3 are alternatively rejected under 35 U.S.C. 102(b) as being anticipate by Stauder et al. 3,024,374 A. Stauder et al. discloses in figure 1 an upper pole piece comprising a ring 16, a lower pole piece comprising another ring 16, a flux stabilization ring 26 which is also the cylindrical housing member made of magnetic material. The housing 26 holds the upper and lower pole pieces together. Also shown in Stauder figure 1 is a top plate 34, a bottom plate 32, a magnet 30 and top and bottom air gaps between the flux return assembly and the top and bottom plates.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roters et al. in view of Hattori et al. 6,225,713 B1 and Redlich 6,483,207 B1. Roters et al. discloses the electromagnetic drive motor but does not disclose a top plate having an increased saturation level where the cross-sectional area is smaller than the rest of the top plate. Hattori et al. teaches in

Art Unit: 2834

column 12 lines 51-65 diminishing the cross-sectional area of a part of a magnetic circuit to saturate that part of the magnetic in order to ensure that the density of the magnetic flux flowing between two magnetic surfaces increases in response to an increased current. Since Hattori et al. and Roters et al. are from the same field of endeavor it would have been obvious at the time the invention was made for one of ordinary skill in the art to have utilized a reduced cross-sectional area in a magnetic circuit in order to improve the linearity of the motor by ensuring that the density of the magnetic flux increases in response to an increased level of current. Roters et al. as modified by Hattori discloses the electromagnetic drive motor with the reduced surface area but does not disclose the field strength in the magnetic gap. Redlich teaches a linear motor having a saturation level of 15000 Gauss in column 2 lines 35-40. Since Redlich and Roters et al. as modified by Hattori are from the same field of endeavor it would have been obvious at the time the invention was made for one of ordinary skill in the art to have utilized a saturation area with a maximum level of field strength from about 10,000 Gauss to about 22,000 Gauss, which is a typical saturation level for electric steel.

In regard to claim 20, the Hattori et al. teaching of diminished cross-sectional surface area would apply to either a top plate or an upper pole piece.

Claims 21, 23, 30, 49, 51, 77-80, 86 and 87 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roters, deceased et al. in view of Wakeman 5,207,410 A. Roters et al. discloses the electromagnetic drive motor having the top and bottom plates and flux return but does not disclose an enlarged surface on an upper and lower pole tip. In this claim, the word tip is viewed as being the portion of the plate closest to the magnetic gap. Wakeman teaches in the abstract an enlarged surface area in the magnetic circuit. Since Wakeman and Roter et al. are

Art Unit: 2834

from the same field of endeavor it would have been obvious at the time the invention was made for one of ordinary skill in the art to have utilized an increased surface area in the portion of the magnetic element closest to the air gap.

In regard to claims 23, 30, 51, 79 and 80, see Roters et al. figure 3.

Claims 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roters, deceased et al. as modified by Wakeman as applied to claim 21 and further in view of Redlich. Roters et al. as modified by Wakeman discloses the electromagnetic drive motor but does not disclose the magnetic gap saturated to a field strength level of about 10,000 Gauss to 22,000 Gauss. Redlich teaches a linear motor having a saturation level of 15000 Gauss in column 2 lines 35-40. Since Redlich and Roters et al. as modified by Wakeman are from the same field of endeavor it would have been obvious at the time the invention was made for one of ordinary skill in the art to have utilized a saturation area with a maximum level of field strength from about 10,000 Gauss to about 22,000 Gauss, which is a typical saturation level for electric steel.

Claim 50 is rejected under 35 U.S.C. 103(a) as being unpatentable over Roters et al. as modified by Wakeman as applied to claim 49 and further in view of Hattori. Roters et al. as modified by Wakeman discloses the electromagnetic drive motor but does not disclose saturating the flux return near the top and bottom magnetic gaps. Hattori et al. teaches in column 12 lines 51-65 diminishing the cross-sectional area of a part of a magnetic circuit to saturate that part of the magnetic in order to ensure that the density of the magnetic flux flowing between two magnetic surfaces increases in response to an increased current. Since Hattori et al. and Roters et al. as modified by Wakeman are from the same field of endeavor it would have been obvious at the time the invention was made for one of ordinary skill in the art to have utilized a reduced

cross-sectional area in a magnetic circuit in order to improve the linearity of the motor by ensuring that the density of the magnetic flux increases in response to an increased level of current.

Claims 58, 59 and 88 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roters et al. in view of Hattori. Roters et al. discloses the electromagnetic drive motor but does not disclose saturating the flux return near the top and bottom magnetic gaps. Hattori et al. teaches in column 12 lines 51-65 diminishing the cross-sectional area of a part of a magnetic circuit to saturate that part of the magnetic in order to ensure that the density of the magnetic flux flowing between two magnetic surfaces increases in response to an increased current. Since Hattori et al. and Roters et al. are from the same field of endeavor it would have been obvious at the time the invention was made for one of ordinary skill in the art to have utilized a reduced cross-sectional area in a magnetic circuit in order to improve the linearity of the motor by ensuring that the density of the magnetic flux increases in response to an increased level of current.

Claim 52 is rejected under 35 U.S.C. 103(a) as being unpatentable over Roters, deceased et al. as modified by Wakeman as applied to claim 49 and further in view of Mody et al. 6,043,978 A. Roters et al. as modified by Wakeman discloses the electromagnetic drive motor but does not disclose using finite element analysis to optimize the design of the motor. Mody et al. teaches using finite element analysis in column 5 lines 23-28. Since Mody et al. and Roters et al. as modified by Wakeman are from the same field of endeavor it would have been obvious at the time the invention was made for one of ordinary skill in the art to have utilized finite element analysis in the design of an electric motor.

Claims 53-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roters, deceased et al. as modified by Hattori as applied to claim 49 and further in view of Redlich. Roters et al. as modified by Wakeman discloses the electromagnetic drive motor but does not disclose the magnetic gap saturated to a field strength level of about 10,000 Gauss to 22,000 Gauss. Redlich teaches a linear motor having a saturation level of 15000 Gauss in column 2 lines 35-40. Since Redlich and Roters et al. as modified by Wakeman are from the same field of endeavor it would have been obvious at the time the invention was made for one of ordinary skill in the art to have utilized a saturation area with a maximum level of field strength from about 10,000 Gauss to about 22,000 Gauss, which is a typical saturation level for electric steel. In regard to the limitations of a minimum level of field strength within a certain range in claim 53, a maximum level of field strength within a certain range in claim 54 and a maximum level of field strength within a broader range in claim 55, see *In re Aller*, 105 USPQ 233 (CCPA 1955) which states, "More particularly where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." Therefore the claimed optimum or workable ranges are given little patentable weight.

Allowable Subject Matter

Claims 44-48, 82 and 83 allowed.

Claims 2, 4-18, 22, 56, 57, 60, 61 and 81 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, provided the 112 rejections of these claims are overcome.

The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record does not disclose or teach an electromagnetic drive motor having a flux return within top and bottom plates in combination with the other features of claim 2. The prior art of record does not disclose or teach a method of forming a flux return with upper and lower pole tips with an enlarged surface and a flux stabilization ring smaller in inner diameter than the diameter of the outer wall of the pole pieces as recited in claim 44. The prior art of record does not disclose or teach enlarging the surface area of top and bottom plates near the air gaps combined with reducing the cross-sectional area of the plates as recited in claims 56 and 57. The prior art of record does not disclose or teach top and bottom plate tips facing toward each other in combination with the other features of claim 60. The prior art of record does not disclose or teach increasing the surface of a plate near the magnetic gap in combination with saturating regions adjacent to the upper and lower pole tips as recited in claim 81. The prior art of record does not disclose or teach a method for coupling an upper and lower pole piece each having a recess wall by press fitting the recess outer walls into a ring as recited in claim 82.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Fisher discloses in figure 1 a finger or tip 36 and another finger or tip 12 .

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Judson H Jones whose telephone number is 703-308-0115. The examiner can normally be reached on 8-4:30 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on 703-308-1371. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Application/Control Number: 09/696,392
Art Unit: 2834

Page 11

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.



JHJ 10/28/2003



BURTON S. MULLINS
PRIMARY EXAMINER